

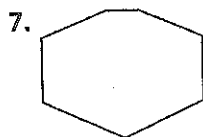


Practice and Problem-Solving Exercises



A Practice

Find the sum of the interior angle measures of each polygon.



8. 35-gon

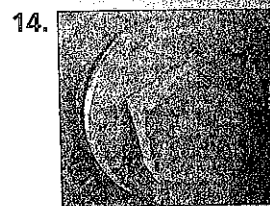
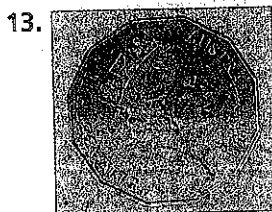
9. 14-gon

10. 20-gon

11. 1002-gon

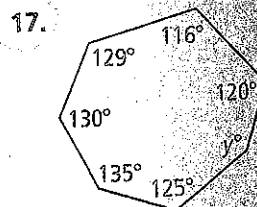
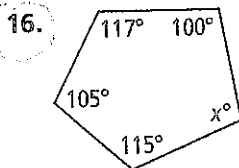
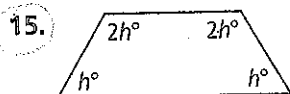
See Problem 1

Find the measure of one interior angle in each regular polygon.



See Problem 2

Algebra Find the missing angle measures.



See Problem 3

Find the measure of an exterior angle of each regular polygon.

18. pentagon

19. 36-gon

20. 18-gon

21. 100-gon

See Problem 4

B Apply

The sum of the interior angle measures of a polygon with n sides is given. Find n .

22. 180

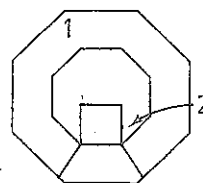
23. 1080

24. 1980

25. 2880

- © 26. **Open-Ended** Sketch an equilateral polygon that is not equiangular.

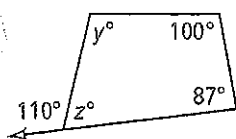
27. **Stage Design** A theater-in-the-round allows for a play to have an audience on all sides. The diagram at the right shows a platform constructed for a theater-in-the-round stage. What type of regular polygon is the largest platform? Find the measure of each numbered angle.



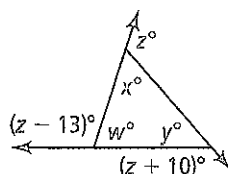
- © 28. **Think About a Plan** A triangle has two congruent interior angles and an exterior angle that measures 100. Find two possible sets of interior angle measures for the triangle.
- How can a diagram help you?
 - What is the sum of the angle measures in a triangle?

Algebra Find the value of each variable.

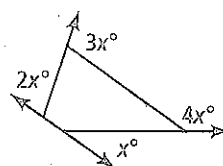
29.



30.



31.



The measure of an exterior angle of a regular polygon is given. Find the measure of an interior angle. Then find the number of sides.

32. 72

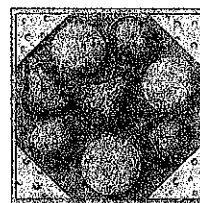
33. 36

34. 18

35. 30

36. x

Packaging The gift package at the right contains fruit and cheese. The fruit is in a container that has the shape of a regular octagon. The fruit container fits in a square box. A triangular cheese wedge fills each corner of the box.



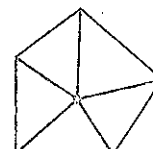
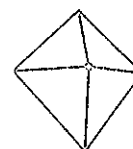
37. Find the measure of each interior angle of a cheese wedge.

- © 38. **Reasoning** Show how to rearrange the four pieces of cheese to make a regular polygon. What is the measure of each interior angle of the polygon?

39. **Algebra** A polygon has n sides. An interior angle of the polygon and an adjacent exterior angle form a straight angle.

- What is the sum of the measures of the n straight angles?
- What is the sum of the measures of the n interior angles?
- Using your answers above, what is the sum of the measures of the n exterior angles?
- What theorem do the steps above prove?

- © 40. **Reasoning** Your friend says she has another way to find the sum of the interior angle measures of a polygon. She picks a point inside the polygon, draws a segment to each vertex, and counts the number of triangles. She multiplies the total by 180, and then subtracts 360 from the product. Does her method work? Explain.



41. **Algebra** The measure of an interior angle of a regular polygon is three times the measure of an exterior angle of the same polygon. What is the name of the polygon?